WHAT IS CLAIMED IS:

1. A modulator comprising:

a waveguide having an input port for receiving light of wavelength λ and an output port for transmitting modulated light; and

a resonator having a resonance at wavelength λ, said resonator being coupled to said waveguide between said input and output ports such that at least 10 percent of said light traveling in said waveguide is coupled to said resonator, said resonator comprising a material having a first state and a second state, said resonator being critically coupled to said waveguide in said first state and said resonator being non-critically coupled to said waveguide in said second state, said first and second states being selectable by a signal that is applied to said resonator.

2. The modulator of Claim 1 wherein said material absorbs light of wavelength λ and wherein said absorption depends on said state.

3. The modulator of Claim 1 wherein said material has a first index of refraction in said first state and a second index of refraction in said second state, said first index of refraction being different from said second index of refraction.

4. The modulator of Claim 1 wherein said resonator comprises a microdisk resonator.

5. The modulator of Claim 1 wherein said resonator comprises a folded cavity resonator.

6. The modulator of Claim 1 wherein said waveguide and said resonator occupy different portions of a layered structure comprising an n-type semiconductor layer, an active region comprising a quantum well layer, and a p-type semiconductor layer, said active region absorbing light of wavelength λ more strongly in said first state than in said second state, wherein said active region in said portion of said layered structure occupied by said

waveguide is disordered, thereby rendering said active region in that portion more transparent to light of wavelength λ than said active layer of said layered structure occupied by said resonator when said resonator is in said first state.

7. The modulator of Claim 1 wherein said waveguide and said resonator comprise InP-based materials.

8. The modulator of Claim 1 wherein said resonator has a Q of less than 6000.